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Pennsylvanians are like people throughout the United States and around the world in their perceptions of and interactions with snakes. Few other animals evoke such polarized emotions as fear, admiration, intrigue, and ignorance. Throughout history snakes have played integral roles in mythology and folklore. Far too often when a person encountered a snake, the snake did not survive the experience. Snakes have often been characterized as evil or sinister. On the contrary, snakes do not possess such human characteristics. Their mission in life is to eat, grow, and survive to reproduce, thereby continuing their species. Snakes are animals of which people usually have strong opinions. Often those opinions have been handed down through the generations like heirlooms instead of this being based on personal experience. However, more people are beginning to realize that snakes are an important part of the animal kingdom and play a specific and specialized role in the overall scheme of life.

Twenty-one species of snakes are considered to be native to Pennsylvania. Each species has evolved to occupy a specific niche in our natural environment. Although they do indeed provide tangible benefits to man, they are worthy of respect and protection, because they are wild animals and a part of the natural heritage of Pennsylvania.

Biology

Snakes possess a well-developed skeletal structure and are therefore considered vertebrates. Like lizards and turtles, their bodies are covered with scales, which also classifies them as reptiles. Snakes and other reptiles are poikilothermic, which is derived from Greek terms meaning variable temperature. This means that their body temperature depends largely on the temperature of their surroundings. Snakes must move into and out of various temperature zones to regulate their bodily functions properly. Basking in the sun is vital to physiological processes such as temperature regulation, digestion, and egg development.

Snakes do not have limbs that allow them to reach out and touch things, so they need to be able to monitor their environment by some other method. They possess a forked tongue that flicks in and out of the mouth to sample scent molecules. The tongue transfers these molecules to the Jacobson's organ located on the roof of the mouth. Chemical information is transferred to the brain, which allows the snake to interpret the smell. Scent trailing is used in locating prey, finding mates, and returning to hibernating areas.

Reproduction

Mating can occur from spring until fall, depending on the species. Snakes give birth in one of two ways. Species that lay eggs, such as the black rat snake, are termed *oviparous*. Other species including garter snakes, water snakes, and Pennsylvania's three venomous species give birth to live young and are termed *ovoviviparous*. Young are usually born or hatch in late summer or early fall. Egg or embryo development ranges from eight to 12 months. Reproduction in ovoviviparous species such as the timber rattlesnake first occurs at three to seven years after birth. Some species may also bear young only at two-year to three-year intervals. The number of eggs or young produced by Pennsylvania snakes varies depending on the species. Northern ringneck and worm snakes typically produce litters of one to six young, and eastern hognose, eastern garter, and northern brown snakes can produce litters of three dozen to four dozen young. Juvenile snakes are prey for predatory birds, some mammals, and even other snakes.

Growth

Snakes, like most animals, grow rapidly early in life. Their bodies enlarge until the skin must be shed for growth to continue. Young snakes can shed four or more times per year during their first two years of life. As adults they may shed only once or twice per year. Snakes that are about to shed typically display a cloudy or bluish appearance to their eyes, caused by the old skin and the lymph fluid secreted beneath it in preparation for shedding. The first rattle segment in newborn rattlesnakes is called a button. Each time a rattlesnake sheds, a new rattle segment is added at the base of the tail. Each shedding carries the button farther from the tail base. Because buttons and rattle segments can easily be lost and shedding rates vary widely, counting rattle segments is not an accurate way to determine the age of the snake.

Food, feeding

Pennsylvania snakes have varied diets, although all are carnivorous. Food choices include insects, worms, amphibians, reptiles, birds, and small mammals. Some snakes display distinct food preferences. For example, eastern hognose snakes specialize in consuming toads and frogs. This snake is unaffected by the distasteful toxins that toads often secrete from their paratoid glands. Black rat snakes are excellent climbers and often forage on small birds or their eggs. Snakes are an integral part of the food web in any environment. As a predator, they are important in maintaining the fitness of the animals they prey on.

Nonvenomous snakes such as garter snakes grasp prey with their mouths and swallow it whole. Black rat snakes and milk snakes constrict their prey by encircling its body, resulting in suffocation before



Venomous



Northern Copperhead

Agkistodon contortrix mokeson

The northern copperhead is Pennsylvania's most common venomous snake. Found in all but the northernmost counties, it prefers abandoned foundations, rock walls, and rocky hillsides. They may be found at den sites with timber rattlesnakes.



Timber Rattlesnake

Crotalus horridus horridus

Timber rattlesnakes are the largest venomous snakes of Pennsylvania and inhabit the mountainous regions of the Commonwealth. They can be locally abundant in certain areas, but overall their numbers are low.

SNAKEBITE?

If a person is bitten by a venomous snake, there are several steps that should be taken. The staff at the Penn State Poison Center of the Milton S. Hershey Medical Center in Hershey, Pennsylvania, recommends the following do's and don'ts in the event of a snakebite.

DO'S

1. Calm and reassure the victim, and keep the victim immobile.
2. Call 911 or the Penn State Poison Center at 1-800-222-1222.
3. You may apply a light constricting band above the bite area (be able to insert a finger under the band). Do not release the band unless it becomes too tight from swelling.
4. Move the victim to a medical facility without delay.
5. A tetanus shot may also be required.
6. Immediately transport the victim to a medical facility.

DON'TS

1. Don't use ice, cold packs, or sprays.
2. Don't incise and suction unless directed by a physician.
3. Don't use a tourniquet.
4. Don't give alcohol or any drugs.
5. Don't wait to see if symptoms develop.

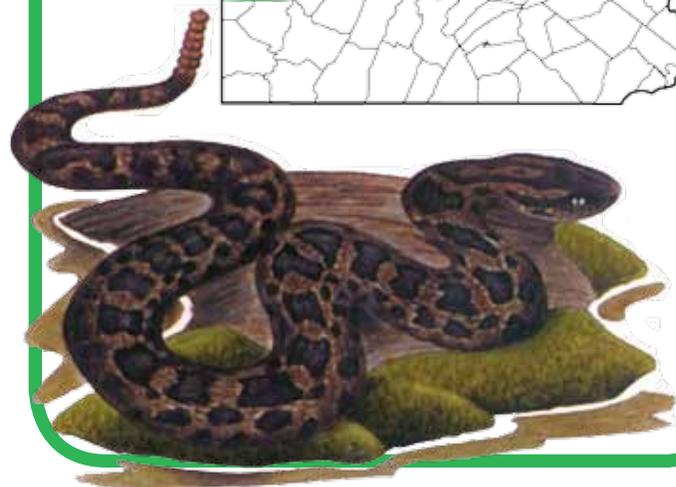
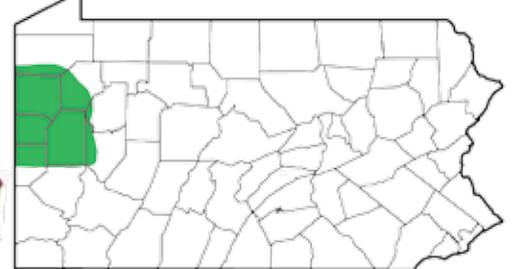


Eastern Massasauga Rattlesnake

Sistrurus catenatus catenatus

The eastern massasauga belongs to the pygmy rattlesnake family and is found only in a few western counties. This Pennsylvania endangered species is found in wetland areas and has received the nickname swamp rattler.

ENDANGERED SPECIES



Nonvenomous

Eastern Hognose
Heterodon platyrhinos



Northern Ringneck
Diadophis punctatus edwardsi



Northern Black Racer
Coluber constrictor constrictor



Black Rat with young
Elaphe obsoleta obsoleta



Eastern Garter
Thamnophis sirtalis sirtalis



Short-Headed Garter
Thamnophis brachystoma



Eastern Ribbon
Thamnophis sauritus sauritus

Eastern Smooth Green
Opheodrys vernalis vernalis



Eastern Milk
Lampropeltis triangulum triangulum

consumption. Black racers often hold their prey down to the ground by the weight of their body, which also results in suffocation. Venomous snakes capture prey by striking it and injecting venom through two large modified teeth, or fangs. Venom is a modified saliva that contains digestive enzymes and toxic proteins that destroy cells, causing hemorrhaging and fluid imbalance leading to shock and death. Prey struck by a venomous snake often travels a short distance before dying. The snake finds the dead prey by following its scent trail.

Venomous, nonvenomous?

There are 18 nonvenomous and three venomous snake species in Pennsylvania. Some key physical differences between these two groups of Pennsylvania snakes facilitate their identification. These characteristics do not necessarily apply to the differentiation of species not native to Pennsylvania.

All Pennsylvania native venomous snakes possess 1) an indentation or pit on each side of the head between the eye and nostril, 2) a vertically elliptical eye pupil resembling that of a cat, and 3) a single row of scales on the underside of the tail. Of course, rattlesnakes usually display one or more rattles. However, these can be missing because of natural causes.

Nonvenomous Pennsylvania native snakes do not possess facial pits, their eye pupils are round like a human's, and there is a double row of scales on the underside of the tail.

Head shape often presents problems in identification. Rattlesnakes and copperheads have obviously flattened, triangular-shaped heads. However, some nonvenomous species can also at times display a flattened head. The average person often misinterprets head shape in snakes that one has seen. Therefore, it is wise to focus on the other characteristics when identifying snakes.

Venomous snakes and people

The three venomous species of snakes in Pennsylvania are the northern copperhead, eastern massasauga rattlesnake, and timber rattlesnake. Reports of venomous snakebites in Pennsylvania are rare. Bites usually occur while a person is trying to catch or carelessly handle one of these snakes. All of these species are usually nonaggressive and prefer to avoid confrontation. Thus, they often quietly move away from an approaching human or remain completely still and allow what they perceive as a threat to pass by.

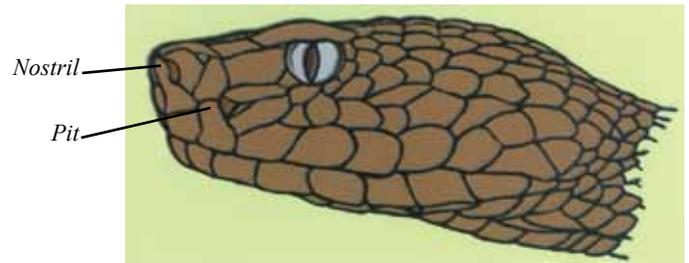
Contrary to popular belief, rattlesnakes do not always rattle when a person or animal is near. When traveling through areas thought to contain venomous snakes, people can minimize the possibilities of an unintended encounter by using some common sense. In the vast majority of encounters with snakes, people have more than ample opportunity to stop, backup, or otherwise avoid the snake.

Snakes tend to be found near cover such as fallen logs, brush piles, rock walls, abandoned house foundations, or rock ledges. They may be resting or lying in wait for prey. Encounters can be reduced by watching where you place your hands and feet. One should try to walk around, rather than step over fallen logs.

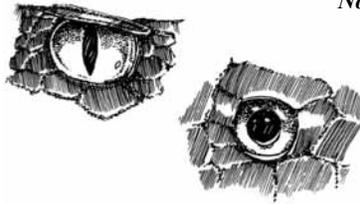
Sometimes a person's curiosity or fear can lead to poor judgement and possibly result in a snakebite. There are several signs and symptoms of envenomation. They include fang marks, pain, and possibly a metallic or rubbery taste in the mouth several minutes after a bite, with a tingling or numbness of the tongue. Other signs include significant swelling within 10 minutes of a bite. Nausea, weakness, and temperature change may occur. Black and blue discoloration may appear within three to six hours.

Collecting or killing snakes

All snakes in Pennsylvania are protected by Pennsylvania Fish & Boat Commission regulations. Species that are not listed as Endangered, Threatened, or Candidate may be captured or possessed under specific daily and possession limits (Consult the *Pennsylvania Fishing Summary*). Endangered or Threatened species such as the Kirtland's snake, eastern



Venomous snakes belong to the pit viper family and possess a heat-sensing pit on each side of the head between the eye and nostril.



The eyes of Pennsylvania's venomous snakes have vertical, elliptical pupils resembling those of a cat. Nonvenomous snakes have round pupils like a human eye.



Venomous with rattle



Venomous-scales in a single row



Nonvenomous-scales in a double row



Venomous



Nonvenomous

massasauga, and rough green snake cannot be caught, killed, possessed, imported to, or exported from Pennsylvania. The timber rattlesnake is protected under additional regulations and permits regarding seasons and possession limits. Specific questions about current regulations can be directed to any of the Commission's Regional Law Enforcement Offices or the Herpetology and Endangered Species Coordinator.

Coexisting with snakes

Snakes are an essential component of Pennsylvania's wildlife resources. Fear or negative attitudes about snakes often stem from a lack of knowledge of their habits and role in the ecosystem. A person's attitude about snakes appears to correlate with the relative nearness of a snake at any given time. For example, some people do not think twice about snakes until they show up in their backyard, shed, or house. The majority of snakes appearing in these areas are nonvenomous, harmless, and usually beneficial to man. Still, it is understandable that when a snake is discovered near or in the house, people quickly seek a way to remove it.

Ideally, people should take precautions to prevent snakes from entering dwellings. Sealing openings and cracks especially at or near ground level is an excellent preventive measure. Removing debris in the yard or moving the wood pile farther from the house can also help. Snakes have biological needs such as food and cover that must be met for them to remain in a location. If those needs are not met, they move on. Remember also that when people choose to locate a home or camp in the woods or wilderness, snakes come with the territory.

Increased awareness of snakes and their habits usually leads to a new appreciation of them and their part in our world. Field guides and life history books are great tools for bridging gaps in knowledge. For beginners, a trip to the reptile house of a local zoo armed with a field guide is a good way to make the transition between printed pictures and live animals. The next time you see a snake in the backyard or crossing a road, respect it for what it is, what it does, and allow it to continue on its way.